

# Weekly Report for 08/25/2014

## MCR Operations

### Storage Ring Operations

- Discussed with Schroeder and Mohan a beam steering issue with ID31 (too close to horizontal limits). Main user at ID31 is unwilling to adjust the steering this coming run. (Louis Emery)

## APS Machine Studies

### Storage Ring Studies

- With Sajaev successfully stored 31.5 mA in one bunch at +14 chromaticity, and lower rf voltage. The result is that we have adjustments that can help us in runs when a higher than expected impedance chamber is installed. Made analysis of beam size of the high single bunch stores. It seems that this is the usual turbulent energy spread that goes with  $(1/3)$  power of current. (Louis Emery)
- Received Sajaev's calculation of local impedance (from my and others measurement) and commented on it. The raw data contains systematic errors which we understand. So we should be able to extract the real signal. (Louis Emery)
- Joined the single bunch accumulation limits study with Vadim and Louis. (Aimin Xiao)
- Summarized ID gap perturbation measurement results and send it to Isaac. (Aimin Xiao)

## APS Machine Research and Development

### Storage Ring Research and Development

- Worked with K. Harkay reviewing her physics talk discussing an abort kicker for the SR with the primary goal of protecting SCU cryostats from quenching due to beam dumps. (Jeff Dooling)
- Met with P. DenHartog (AES-MED) to discuss engineering support to build mounts for the SCU1 BLM PMTs. (Jeff Dooling)
- L. Emery agreed to allow the Cerenkov detector housing presently in the ID4 straight-section to be used for the BLM in ID1. Have not used this ID4 CD since the end of 2013 when the scope tekdp01 was moved to ID6. (Jeff Dooling)
- Further discussions with S. Kramer (NSLS-II) regarding the tech note I sent him looking at gas bremsstrahlung (GB) measurements in S35 with a Pb:Glass radiator. (Jeff Dooling)
- Kramer believes the GB enhancement may be due to ion trapping in the beam. (Jeff Dooling)
- Chaired review of ID30 installation, which included physics issues from increased impedance. Co-wrote executive summary. Discussed impedance and instability results with Sajaev and Lindberg beforehand. (Louis Emery)
- Discussed with Dooling his request to move a ID4 cerenkov detectors to ID1 (for SCU1 location characterization). Gave example of sddsgenefit fit to Dooling for fitting photomultiplier response. (Louis Emery)

### Linac Research and Development

- Working linac tunnel with M. Martens (AES-MOM) and M. Hahne (ASD-DIA) to clean window and mirror of laser injection cube for the pcgun prior to placing the cube under vacuum. (Jeff Dooling)
- Met with J. Morgan (NE) to review laser table elevation. (Jeff Dooling)

- Met with M. Hahne and P. Dombrowski (ASD-DIA) to review design of the linac laser optics table enclosure. Old enclosure had to be modified to fit a smaller footprint in the linac tunnel. (Jeff Dooling)
- worked with alignment group to resolve issues during the PC gun beamline installation in linac; (Yin-e Sun)
- worked with power group to ensure correct wiring the PC gun solenoid magnets. (Yin-e Sun)
- updated technical note on the operations thermionic RF gun 3G2 "Larry" to include the high power RF conditioning and beam commissioning AOP-TN-2013-062 (Yin-e Sun)
- studied cathode quantum efficiency publications from FEL14 etc. (Yin-e Sun)
- Researched on possible experiments using the PC gun beam. (Yin-e Sun)

## ITS Research and Development

- reviewed (Yin-e Sun)

## APS Machine Software

### AOP Applications Software

- Helped Lindberg use ManageSRDeviceStatus -system bpms. (Louis Emery)
- Updated watch element, now the corrected emittance is outputted as parameters. (Aimin Xiao)
- Continue testing SR and IBS effects simulation in elegant, debugging the code. (Aimin Xiao)

### Storage Ring

- improved MXA-VSA tune measurement: added xrange, yrange, xchrom, ychrom, deltaFreq, and alpha\_c arguments to APSGetSRTunesVSA so that it can update the center frequency according to the chromaticity as the RF frequency changes to obtain better waveform. Tested tune and chromaticity measurement with CY, it worked fine. (Hairong Shang)
- fixed an important bug for reading RTFeedback configuration which used the DCOorbitCorrection status to deselect the bad PVs instead of RTFeedback status. (Hairong Shang)

### Injectors

- updated BBPMHistWaveformSetup parameter values per CY's request. (Hairong Shang)
- improved rampload software for loading booster correction ramps: added setting ramp start and end time so that we can change the ramp time as need. Added checking ramp time monotonicity and ramp setpoint validity to provide the error messages when ramp load error occurs. (Hairong Shang)

### General

- revisited sddscomplexpseudoinverse, continue implementing sddscomplexpseudoinverse. (Hairong Shang)

## Publications, papers and report

- produced a conference poster for FEL2014; finalized and submitted a conference paper; (Yin-e Sun)

- Finalized and submitted tech note AOP-TN-2014-41 (Yin-e Sun)
- Finalized and submitted tech note AOP-TN-2014-40 (Yin-e Sun)

## Meetings, workshops, conferences, committees, LMS related, and reviews

- organized photo-injector physics meeting, invited outside speaker to give a presentation on dielectric waveguide experiments using low energy photo-injector beams. (Yin-e Sun)
- attended the postdoc search committee meeting to review applicants. (Yin-e Sun)
- attended RG2 and PC gun installation scheduling meeting. (Yin-e Sun)

## Safety and Required Training

- completed EM116 and SEC101 training. (Yin-e Sun)

## Miscellaneous

- Attended a shutdown installation meeting. (Louis Emery)
- Reviewed two cases of POC-HP. (Louis Emery)
- Refereed NIM-A paper. Made some plans for travel to ESRF and Italy. (Louis Emery)
- Filled out a survey for ANL guest house restaurant. (Louis Emery)
- Took 1.5 day vacation leave (Aimin Xiao)
- took one day (Monday) off as vacation. (Hairong Shang)